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NOTICES FROM THE LICK OBSERVATORY.*

PREPARED BY MEMBERS OF THE STAFF.

DEFINITIVE ORBIT OF THE SPECTROSCOPIC BINARY ι *PEGASI*.†

This binary was discovered by Director CAMPBELL and announced by him in the *Astrophysical Journal* for May, 1899. The spectrum is of Type F, with fairly good lines. The determination of the orbit is made to depend upon forty-three plates, comprising all the plates of this star which have been taken with the Mills spectrograph, with the exception of a few of poor focus or insufficient exposure, which have been rejected. The formulæ and methods used are those of LEHMANN-FILHÉS [*A. N.* 3242], with the addition of a sixth unknown for the change in the assumed velocity of the system.

The preliminary orbit adopted as the basis of the solution is as follows:—

PRELIMINARY ELEMENTS.

Velocity of system = — 3.91 $^{\text{km}}$
T = 1899 June 15.515
= Julian Day 2414821.515
e = 0.0205
ω = $272^{\circ}.732$
$\log \mu$ = 9.78864
$\log \kappa$ = 1.67574
Period = $10^{\text{d}}.2132$

A second solution was found to be necessary, inasmuch as the agreement between the ephemeris from the first solution and substitution of the values of the unknowns in the equations of condition was not sufficiently close, due to omitted terms of the second order in the differential coefficients. The values of the unknowns derived from the second solution, with their probable errors, are as follows:—

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* Lick Astronomical Department of the University of California.

† Abstract of the *L. O. Bulletin*, No. 53.

VALUES OF UNKNOWNS, SECOND SOLUTION.

$\delta V = -0.09 \quad \pm 0.11^{\text{km}}$
$\delta T = -0.200 \quad \pm 0.352$ days
$\delta \mu = +0.00000007 \quad \pm 0.00000407$
$\delta \kappa = +0.0327 \quad \pm 0.1523$
$\delta \omega = -0.1230 \quad \pm 0.0240$ radians
$\delta e = -0.00008 \quad \pm 0.0040$

FINAL ELEMENTS.

$V = -4.12 \quad \pm 0.11^{\text{km}}$
$T =$ 1899 June 14.966 ± 0.352 days
$=$ J. D. 2414820.966
$e = 0.0085 \quad \pm 0.0040$
$\omega = 251^\circ.807 \quad \pm 1^\circ.373$
$\log \kappa = 1.68117 \quad \pm 0.00014$
$\log \mu = 9.7890216 \quad \pm 0.0000029$
$\mu = 35^\circ.2488 \quad \pm 0^\circ.0002$
Period $= 10.21312 \quad \pm 0.00006$ days
$a \sin i = 6{,}740{,}000^{\text{km}}$

The sum of the squares of the weighted residuals has been reduced from 51.14 to 26.25.

The probable error of a single plate as derived from this solution is $\pm 0.56^{\text{km}}$. The relatively large probable errors in the values of T and ω arise from the fact that the orbit is nearly a circle, the eccentricity being only $+0.0085$. On the other hand, inasmuch as the observations cover two hundred and nineteen complete revolutions of the star, the period is determined with considerable accuracy. The largest residual is -2.14^{km}; the range of velocity is from $+43.7^{\text{km}}$ to -52.1^{km} per second.

HEBER D. CURTIS.

March, 1804.

RECENT MEASURES OF ε *HYDRÆ*, AB.

Measures on three nights of SCHIAPARELLI'S rapid binary system, ε *Hydræ*, AB, give the following mean result:—

1904.047 147°.2 0″.25.

The position for this epoch derived from my preliminary elements* is 150°.9, 0″.25, leaving the residuals (O—C),

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* See these *Publications*, Vol. XV, p. 84, and *L. O. Bulletin*, No. 36.

— 3°.7 ± 0″.00. These correspond to a displacement of the companion-star of less than 0″.02 in arc.

R. G. AITKEN.

March, 1904.

A NEW COMPANION TO Σ 1506, AND A NEW NAKED-EYE DOUBLE STAR.

Two of the new double stars recently discovered with the 36-inch telescope are of sufficient interest to be noted at this time. One is a naked-eye star in *Monoceros*, whose position for 1900.0 is R. A. $6^h\ 10^m\ 40^s$; Decl. —9° 0′; the other is the companion to the wide pair Σ 1506, which I find to be a close double. The results of my measures of these stars are:—

Star.	Date.	Angle.	Distance.	Magnitudes.	Nights.	
1	1904.05	158°.2	0″.23	6.6 – 6.6	4	
2	1904.08	55 .5	0 .20	10.0 – 10.0	1	BC (new)
	.08	216 .1	11 .12	7.3 – 9.5	1	A and BC (=Σ1506)

March, 1904.

R. G. AITKEN.

HONORS FOR DIRECTOR CAMPBELL.

Professor W. W. CAMPBELL has been elected a Foreign Member of the Societa degli Spettroscopisti Italiani. This society consists of thirty Italian members and thirty foreigners. Membership in it by a foreigner is a signal honor.

Professor CAMPBELL has also been requested to serve on an honorary committee presided over by the Minister of Public Instruction for France, whose purpose is to forward the project for erecting a monument to the eminent astronomer JEROME LALANDE, at Bourg, the place of his birth.

R. G. A.